

Rhode Island Nonpoint Source Pollution Management Program

**Report of Activities
October 1, 2011 – September 30, 2012
(FY2012)**



Crabbing on the Palmer River

**Rhode Island Department of Environmental Management
Office of Water Resources**

Introduction

Protecting and restoring the waters of the state – surface water, groundwater and wetlands – from pollution due to nonpoint sources continues to be an important focus of state water pollution control programs in Rhode Island. Managing nonpoint sources (NPS) of pollution, such as stormwater runoff and failing septic systems, is challenging. Available monitoring data reveals nonpoint pollution as a widespread problem affecting every watershed in the state. Nonpoint sources are suspected of contributing to the impairments in a majority of the surface waters included on the state's impaired waters list, also known as the 303(d) list.

To prevent and combat NPS pollution, the Rhode Island Department of Environmental Management (DEM) Nonpoint Source Pollution Management program encourages various actions by state and local governments, businesses, watershed groups and individual landowners. The DEM NPS program activities are guided by the RI Nonpoint Source Pollution Management Plan (1995) as well as federal Environmental Protection Agency (EPA) requirements governing Clean Water Act Section 319 funds. The following report describes the accomplishments of DEM and its partners, with respect to nonpoint source pollution for fiscal year 2012 (October 1, 2011 – September 30, 2012). This includes activities supported by Section 319 funds awarded via the Performance Partnership Agreement with EPA, as well as related activities supported by other funding sources.

Along with point source pollution controls, the NPS program is an essential part of RI's overall effort to restore and protect water quality. DEM remains focused on the state's major sources of NPS pollution: stormwater runoff and septic systems. While efforts to enhance state programs are pursued, it will be equally important for the state to continue to assist municipalities in their efforts to actively implement local wastewater and stormwater management programs including complying with new mandates to utilize low impact development (LID) techniques for stormwater management.

Local Grants for NPS Pollution Management

A primary ongoing activity of the DEM NPS Program is the distribution and management of grants from federal Clean Water Act Section 319 funds to local entities. These funds are generally awarded on a competitive basis via a Request for Proposals (RFP). A list of Section 319 grants managed during the 2012 fiscal year is provided in Attachment 1. The 9 projects that were completed this fiscal year are briefly described below. The Section 319 grant amount provided for the project is in parentheses.

In keeping with Rhode Island's focus on low impact development strategies for managing stormwater, the NPS program has focused on funding projects that treat stormwater via infiltration, prior to entering a storm drainage system, rather than at "end of pipe." This approach mimics the function of natural hydrology as closely as possible while achieving water quality benefits.

It should be noted that the "grant amount" indicated in this report for the projects is not the total cost of the project. Grant recipients are required to provide a minimum match in funds or in-kind services. This required minimum match ranges from 10% to 40% (depending on the type of project) of the grant project

budget (grant plus match). Completion of the recipient's desired project occasionally requires more than the minimum match.

Barrington: Allin's Cove Paper Street and Bay Spring Avenue Project (\$153,390)

Allin's Cove, also known as Drowne Cove, is about 21 acres in size. It opens into Providence River, which is impaired by nutrients, dissolved oxygen, and pathogens. The cove includes seven acres of open water, seven acres of marsh, two acres of sand and five acres of upland coastal habitat. A significant amount of work has been done to improve the water quality and habitat value of this cove, including a marsh restoration by the U.S. Army Corps of Engineers and CRMC in 2007. The Cove is impaired by untreated stormwater from surrounding neighborhoods.

This project is the result of prior feasibility and conceptual design work funded by a Section 319 grant in Fiscal Year 2002 to identify potential options to improve the water quality in the Cove. The project completed this year involved designing, permitting and constructing stormwater best management practices (BMPs) to improve water quality discharged to Allin's Cove. The town constructed a subsurface infiltration trench system in the paper street that connects Short Road west to the Cove and a vegetated swale at Bay Spring Avenue near the Barrington Cove Apartments. The resulting BMPs are projected to annually remove 802 pounds of nitrogen, 94 pounds of phosphorus and 13 tons of sediment.

Barrington: Allin's Cove Feasibility and Design Study for Third Street Outfall (\$10,100)

A comprehensive analysis of the Third Street catchment area that drains to Allin's Cove in Barrington was necessary to select cost effective, technically feasible and environmentally acceptable BMPs and pollution prevention options to meet water quality targets for the outfall. The project consultant conducted a survey of the roadways and associated rights of way, easements and adjacent publicly owned and other potentially available undeveloped properties in the study area and prepared a Stormwater Attenuation and Source Reduction Strategy, which included 10% conceptual designs for BMPs, including upstream infiltration options. The Town will utilize this Feasibility and Design study to determine how to move forward in its continuing efforts to improve the water quality in Allin's Cove.

East Greenwich Hill and Harbour Stormwater Infiltration Project (\$146,000 - \$117,000 from Section 319/\$29,000 from Bay and Watersheds Restoration Fund)

The Hill and Harbour District of East Greenwich is a historic district with a steep slope leading towards Greenwich Bay. As a result, untreated stormwater travels quickly into the Bay. In addition, because this is a highly urbanized historic area with very small lots, there are few municipally owned areas available for the placement of stormwater treatment BMPs. The Town of East Greenwich proposed to identify feasible locations in the streets and rights of way in the Hill and Harbour neighborhood to place infiltrating catch basins to reduce the amount of stormwater entering the stormwater drainage system and all the pollutants associated with that runoff, including sediment, nutrients and fecal coliform. Infiltrating catch basins allow for the first flush of stormwater, which typically carries the most pollutants, to infiltrate into the surrounding soils, rather than continuing into a municipal stormwater system. Infiltration is one of the most effective means for the removal of bacteria such as fecal coliform from stormwater. Greenwich Cove has a

TMDL for fecal coliform, but is also known to have low dissolved oxygen associated with nutrient loading.

The Town Assistant Engineer performed a feasibility study of proposed BMP locations to determine the best locations for infiltrating catch basins in the study area. The Town was able to install infiltrating catch basins at 23 locations. These infiltrating catch basins are projected to annually remove 2,401 pounds of nitrogen, 375 pounds of phosphorus and 53 tons of sediment.

Middletown: Gaudet Middle School Stormwater Retrofit (\$24,064)

The project involved the management of stormwater runoff from Gaudet Middle School's western parking lot. The Town constructed a bioretention system, water quality swale, and vegetated buffer, replaced existing catch basins with 4-foot deep sump catch basins, and installed a trench drain, all of which are projected to annually remove 40 pounds of nitrogen, 5 pounds of phosphorus and 8 tons of sediment. Bioretention has been demonstrated as an effective treatment practice for pollutants commonly found in runoff from parking lots. During the project, the students at Gaudet Middle School were taught about pollution from stormwater and about the purpose and design of the project by the school's Green Team advisor.



Gaudet Middle School bioretention system after a 1½" rainstorm

Middletown: Newport Avenue Bioretention Stormwater Retrofit Design and Implementation (\$41,005)

Middletown's Atlantic Beach Club, as well as the adjacent Easton's Beach (also known as First Beach) in Newport are important beaches for tourism and the local economies and are classified by EPA as a "Flagship Beaches." During the 2006 beach season, prior to any bacteria mitigation measures, Easton's Beach was closed to the public for 12 days. As a result of the development of a Stormwater Treatment Feasibility Study of drainage areas that contribute stormwater to Easton's Bay by the Town of Middletown, the outfall from the Newport Avenue neighborhood was identified as one of several outfalls contributing to the elevated bacteria levels in Easton's Bay.

Instead of focusing on end-of-pipe treatments at the outfall itself, the Town opted to work on infiltrating stormwater in the upland sections of the watershed in order to reduce the amount of stormwater entering the drainage system leading to this outfall. The project involved the design of bioretention cells located within the Newport Avenue outfall catchment area at the corners of Newport and Ellery and Newport and Renfrew Avenues. Stormwater from the first inch of rain is now directed to the cells to percolate through the system where it is treated by physical, chemical and biological processes with a projected annual remove of 397 pounds of nitrogen, 53 pounds of phosphorus and 8 tons of sediment. The bioretention cells were constructed by Middletown Department of Public Works staff as part of the Town's in-kind match requirement.

Since the high number of closures in 2006, with the implementation of this project as well as the installation of an ultraviolet disinfection system for the water discharging from Easton's Pond, beach closures have dropped dramatically to a single day during the 2012 beach season.



Newport Avenue Bioretention BMP

Smithfield: Woonasquatucket Reservoir Stormwater Abatement at Mann School Road (\$183,700)

This project reduces and treats the stormwater that flows into the Woonasquatucket Reservoir off of Wionkehiege Hill by means of Mann School Road, Williams Road and Log Road. Due to the steep topography of this neighborhood, prior to installation of this system stormwater flowed overland very quickly into Woonasquatucket Reservoir with no treatment, resulting in a large, clearly visible sediment delta at the outfall.

The Town of Smithfield chose to install a two part infiltration system. An underground infiltration system preceded by oil/water separators was installed at the intersection of Mann School Rd and Williams Rd. Overflow from this system is combined downslope with stormwater from Log Rd and discharged to an infiltration basin. The Town of Smithfield has reported that between the completion of the project in September 2011 and April 30, 2012, the system has captured 100% of all observed rain events with no water coming out of the system via the overflow at the end of the infiltration basin (either observed directly or any indication of any overflow). This combined infiltration system is projected to annually remove 1000 pounds of nitrogen, 136 pounds of phosphorus and 19 tons of sediment.



Upper infiltration area at Mann School and Williams Roads.

Warwick: Tuscatucket Brook Stormwater Abatement Feasibility Study (\$34,350)

The 655-acre Tuscatucket Brook watershed drains into Brush Neck Cove on Greenwich Bay. Greenwich Bay has been identified as being impaired by pathogens, nutrients and low dissolved oxygen. Tuscatucket Brook itself is identified as being impaired for pathogens. The Greenwich Bay TMDL (2006) has identified stormwater as a significant contributor to impairments in the Greenwich Bay watershed.

The City's consultant developed conceptual (10%) engineering design plans for BMPs with a focus on upland attenuation of stormwater at several locations along Tuscatucket Brook. In cases where upland attenuation was not possible, end-of-pipe BMPs were identified. The study also developed a ranking system using a cost/benefit approach that prioritized future BMPs based upon factors agreed upon by the

City and RIDEM. This serves as a first step in restoring water quality and resource values to Brush Neck Cove and Greenwich Bay.

Warren: Salt Storage Facility (\$100,000)

The Town of Warren had an uncovered salt shed at their Department of Public Works facility located on Birch Swamp Road that resulted in the loss of salt to groundwater and the surrounding surface water. This project provided funding for the construction of wood framed salt storage structure to store up to 225 tons of salt/sand. Covering the salt pile will eliminate transmission of salt and sediment from the pile to the Palmer River – in particular, Belchers Cove, a small isolated cove directly south of the location of this project. The estimated sediment load reduction for this project is 0.18 tons of sand per year.

Westerly: Salt Storage Facility (\$174,394)

Prior to this project, the Westerly Department of Public Works salt/sand storage supply was stored in an uncovered pile on an asphalt parking lot surface at the Westerly Transfer Station/DPW Facility adjacent to Chapman Pond. It was apparent through visual observation that some erosion of the pile due to precipitation was occurring and that the sand and salt were being transported from the pile site to Chapman Pond. The purpose of the project was to construct a salt storage facility at the nearby Westerly DPW Highway Garage site and relocate the salt pile to this structure. The Town's consultants designed and constructed two fabric covered salt storage structures at the site that will cover 54,000 cubic feet of salt or salt/sand mix. The estimated sediment load reduction for this project is 1.28 tons of sand per year.



One of the two fabric covered salt storage structures in Westerly

Ambient Monitoring – Identifying NPS Pollution in Surface Waters

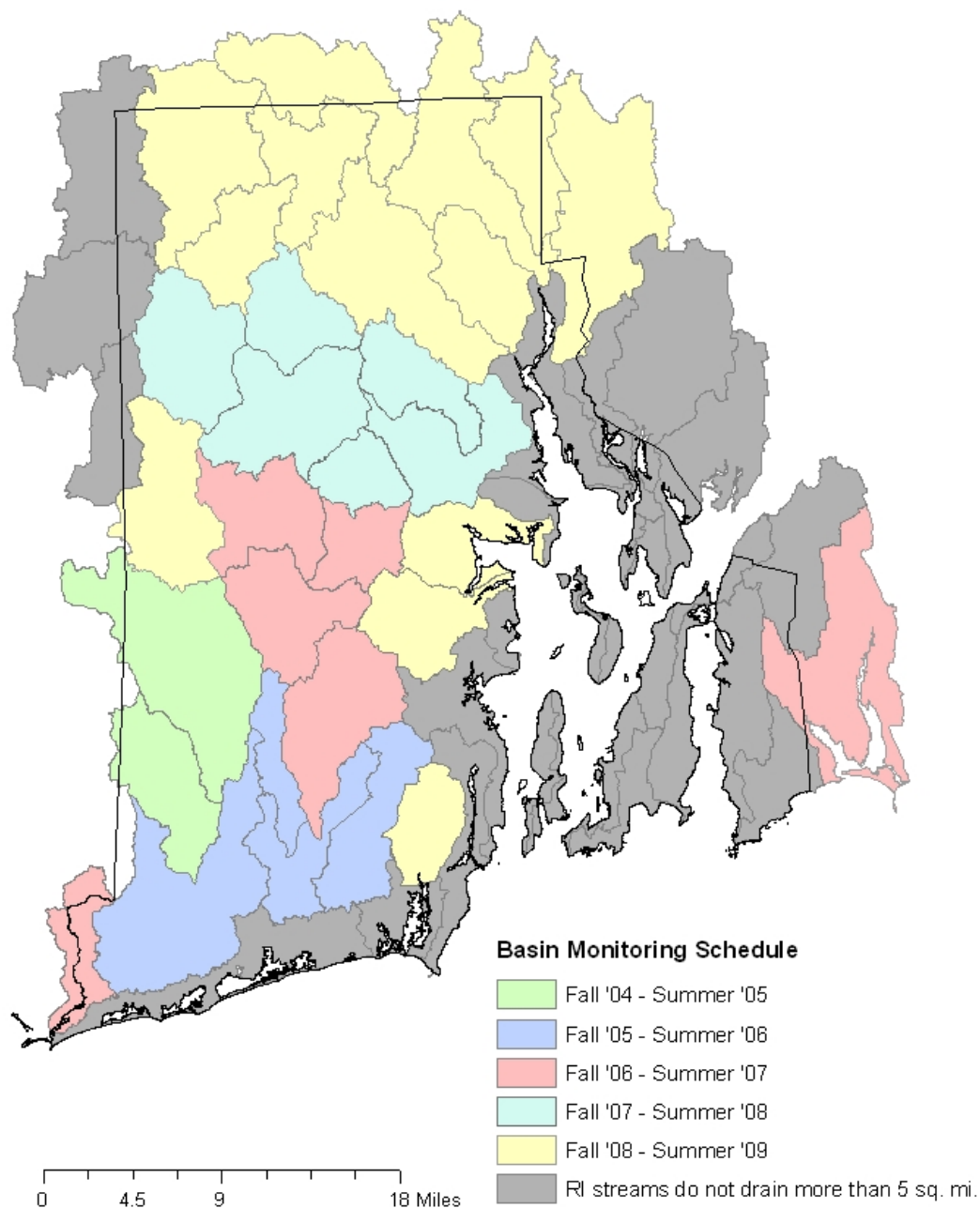
To help assess the effects of NPS pollution, the DEM NPS program continues to contribute to the implementation of the statewide RI Water Monitoring Strategy by providing funding that supports volunteer-based monitoring of lakes and biological monitoring in rivers and streams. Both programs are essential to assessing whether the state's freshwaters support healthy aquatic communities.

DEM's partnership with the URI Watershed Watch Program, from 1999 to the present, supports seasonal monitoring by volunteers that provided the primary source of data to allow DEM assessment of 74% of lake acres as reported in the 2012 Integrated Water Quality Monitoring and Assessment Report. The data are used to help identify water quality impairments. As there are no point discharges of sanitary wastewater authorized for lakes in the state, water quality pollution problems in lakes are largely attributable to nonpoint source pollution sources.

DEM's biological monitoring of rivers and streams focuses on sampling for macroinvertebrates. This biological community has proven to be a reliable indicator of water quality and habitat condition that reflects the cumulative effects of various stressors, including nonpoint source pollution. Sampling and taxonomic identification is performed by a contractor (currently ESS Group, Inc.) for DEM at selected stations annually. Since 2004, the sampling has been targeted to support the implementation of the rotating basin approach for assessing rivers and streams. About 200 stations have been sampled via this program, providing a statewide dataset that supports a more complete assessment of water quality conditions in rivers and streams. Sixty-five percent of total river miles in RI were reported as assessed for one or more designated use in the 2012 Integrated Report. The data are used to identify biodiversity impairments in rivers and streams. DEM has found such impairments to be widely distributed in the state and often associated with nonpoint sources of pollution. Figure 1 reflects which watersheds were sampled under this monitoring strategy during the first five-year basin rotation. During 2012, DEM continued the second basin rotation cycle by sampling in the Pawtuxet River, Hunt River and Moosup River watersheds.



RIDEM Surface Water Monitoring Program Chemical and Biological Sampling 2004-2009 Rotating Basin Schedule



*Although watershed basin lines extend beyond state borders, targeted sites were located within state boundaries.

Figure 1. River Basin Monitoring

Watershed Planning

The Nonpoint Source Program further advanced Rhode Island's approach to developing watershed-based plans during 2012 for the 24 watershed planning areas designated in RI (see Figure 2).

DEM's approach to watershed planning is two tiered. Tier 1 will be a webpage for each of the watershed planning areas presenting a summary of information available about that watershed with links to documents and other websites for more information. DEM believes this will be an important tool for engaging the public on a watershed basis. The goal is to activate this webpage by the end of FY2013.

Tier 2 will be to compile a watershed plan building on the material collected for the webpage and existing documents, particularly the TMDL reports. These watershed plans, which will satisfy the EPA requirements for watershed based plans, will present in a clear, concise format, a comprehensive overview of the watershed that the public and policy makers at all levels can use to identify key watershed characteristics. Most importantly, the plans will identify actions that are necessary to restore and protect water quality. Recognizing the role of municipal government in managing nonpoint sources of pollution, the emphasis will be on identification of appropriate local actions in the areas of improving stormwater management, local land use regulations, and onsite wastewater management, as well as other watershed specific issues.

A technical assistance project was initiated in FY2010 utilizing EPA's consultant, FB Environmental, to work with DEM on the development of 2 watershed plans as a pilot for DEM's approach in the Barrington-Palmer-Warren Rivers watershed and the Bristol-Kickemuit River watershed. This planning effort actively engaged stakeholders at several stages in the process, including initial kick-off meetings, meetings to provide specific input and to review draft material. Stakeholders included town board/council members, town/regional planners, natural resource professionals, non-profit organizations, and watershed landowners.

Drafts of the two Plans were posted for review in April 2012 and all interested stakeholders were notified. A public meeting was held for each Plan in May, one in Bristol, RI and one in Barrington, RI. At these meetings, after a presentation of the Plans, there was a group exercise to prioritize proposed action items and to identify additional actions in the watershed. Drafts of the Plans were completed in FY2012 and will be finalized in early FY2013.

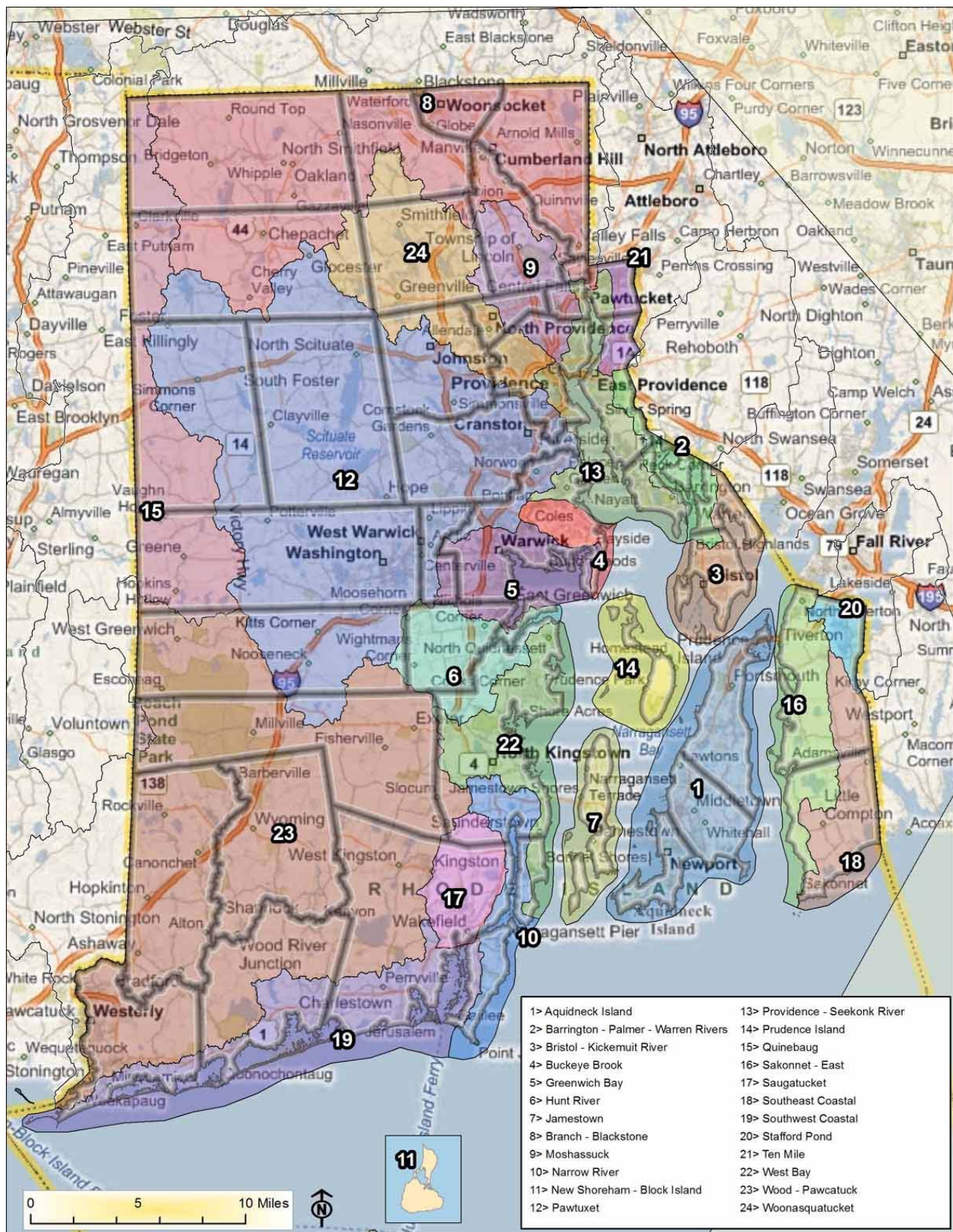


Figure 2. Watershed Planning Areas

Developing Water Quality Restoration Plans (TMDLs)

DEM utilizes Section 319 funding, in conjunction with other state and federal funds, to support development of water quality restoration plans, also known as Total Maximum Daily Load (TMDLs). The plans, required by the federal Clean Water Act, are developed after targeted monitoring and field investigation of a watershed area. The plans identify sources of pollution and determine the level of reduction in pollutant loadings required to meet water quality standards and criteria in specific waterbodies. To support implementation of water restoration actions, the NPS program collaborates with the TMDL program to identify needed NPS abatement projects; e.g. structural pollution controls, BMPs, and encouraging local entities to take advantage of financial assistance programs for such projects, including distribution of Section 319 funds by DEM.

Begun in 2008, Rhode Island utilizes the Integrated Report format to meet its Clean Water Act Section 305(b) and 303(d) list reporting requirements. For the 2012 reporting cycle, assessments were completed on a total of 880 assessment units. Of these, 120 assessment units or 96 named waterbodies have at least one waterbody impairment, and are included on the state's 2012 303(d) list.

Between October 2011 and September 2012, the DEM Office of Water Resources staff continued work to develop water quality restoration plans addressing metals and pathogen impairments on the Blackstone River, Mill River, and Peters River, and nutrient impairments on Scott Pond; metals, pathogen and nutrient impairments on the Ten Mile River and its three impoundments; and an addendum to the Statewide Bacteria TMDL to include lower segments of the Pawcatuck River as well as several tributaries to the Pawcatuck River as well as other small rivers. A listing of all approved and draft TMDLs, their status and further information is found at <http://www.dem.ri.gov/programs/benviron/water/quality/rest/index.html>.

In addition, Office of Water Resources staff participated in a number of meetings and workgroups identified below to encourage and assist in the implementation of actions to improve water quality:

- Coordinated with NPS Program staff and EPA consultants in providing information in preparation of Watershed Plans for the Barrington-Palmer-Warren River and Bristol-Kickemuit River, as well as to review and provide comment on draft watershed plan documents;
- Provided technical review and participated in meetings with various municipalities: 1) Participated on Steering Committee for Roger Williams Park Ponds Water Quality Restoration Study (to among other objectives, implement Roger Williams Park Ponds TMDL) led by City of Providence Parks Department and Narragansett Bay Estuaries Program with STAG grant;
- Provided technical review and participated in meetings with RIDOT to evaluate alternatives for resolving beach closures caused by stormwater discharges at the Scarborough State Beach;
- Outreach: 1) participated as speaker at a community organized Urban Ponds Procession through the streets of South Providence in June 2012 bringing attention to efforts to restore Mashapaug Pond and Roger Williams Park Ponds; 2) With the URI Nonpoint Education for Municipal Officials Program, Save the Bay, and other partners, organized a three workshop series on Stormwater Utility Districts held in the fall of 2011 and winter of 2012 with the final workshop presented as part of the 2012 League of Cities and Towns Annual Convention;
- Attended meetings organized by Natural Resources Conservation Service including the State Technical Team meetings and various sub-committee meetings to coordinate on implementation of Farm Bill

programs (EQIP, WHIP) relative to TMDL and other state water quality priorities including the selection of National Water Quality Incentive watersheds;

- DEM Office of Water Resources worked closely with USDA Natural Resource Conservation staff in identifying watersheds for the National Water Quality Initiative;
- Participated on various standing and ad-hoc groups providing technical and policy development support on: DEM's Partners for Environmental Progress, RI Water Resources Board, State Conservation Committee Goose Control Management project, and DEM Water Quality and Wetlands Restoration Team;
- Working with others in Office of Water Resources, continued to provide direction and support on cyanobacteria monitoring and to communicate results as to need for public health advisory to RI Department of Health. Also staff have continued coordination with Department of Health on implementing communication strategy for advising communities and the general public about public health concerns associated with cyanobacteria blooms;
- Coordinated with Connecticut Department of Environmental Protection and Save the Bay in organizing bi-state workshop on Pawcatuck River Water Quality Restoration;
- Coordinated with Connecticut Department of Environmental Protection in collecting surface water samples on the furthest two downstream segments of the freshwater Pawcatuck River towards development of bacteria TMDLs.;
- Coordinated with Department of Health in establishment and oversight of a source water supply reservoir monitoring program implemented by the Newport Water Department;
- Participated in technical advisory meetings on developing indicators (led by Narragansett Bay Estuary Program);
- Coordination with MADEP Stormwater Coordinator in providing direction and oversight to Bi-State Stormwater Coordinator hired under EPA Grant to advance stormwater management in the Blackstone River and Ten Mile River watersheds; and
- Provided technical support to the Environmental Justice League and its partners in educating residential property owners and industrial park residents of best management practices that can be implemented in support of restoring Mashapaug Pond.

Stormwater Management

Stormwater has been identified as one of the major sources of water quality degradation in RI. As was reported in previous Annual Report's, DEM and the RI Coastal Resources Management Council (CRMC) finalized the updated "RI Stormwater Design and Installation Standards Manual" (December 2010), which dramatically impacts the design of new development and redevelopment projects. The goal of the revised Manual is to integrate the concepts of low impact development in the planning and design of stormwater management as required by the RI "Smart Development for a Cleaner Bay Act of 2007" (RIGL 45-61.2) and to update the Manual with the latest research and technology. See DEM's Stormwater Manual webpage at: <http://www.dem.ri.gov/programs/benviron/water/permits/ripdes/stwater/t4guide/desman.htm>

Stormwater Utilities

During the summer and fall of 2011, the Office of Water Resources staff worked with a seasonal employee funded by a grant from the Narragansett Bay, Watersheds and Rivers Coordination Team, to conduct stormwater utility feasibility studies for the Towns of Middletown, Westerly and Bristol, and partial feasibility study for the City of Cranston. The drivers and compelling arguments to consider adoption of a stormwater utility in each town were described. These included a discussion of town specific stormwater problems, the actions taken by each town to address these problems/issues, and what more needs to be done going forward.

Working with local officials, the costs associated with both current stormwater management activities and future needs were also determined. As part of the study, 2010 satellite imagery was analyzed to create up-to-date impervious cover data for each of these towns. The Geographic Information System data layer of the 2010 impervious cover was used to determine the median impervious cover for single family lots in each town. This value, expressed as the Equivalent Residential Unit (ERU), serves as the basis of the simple rate structure used in the feasibility study. The projected funding to meet future stormwater management needs was set as the desired stormwater utility annual revenue. This amount was divided by the total ERUs in each municipality to determine the annual fee per ERU. The fee for each parcel can be calculated by multiplying the number of ERUs within the parcel by the rate per ERU. The Office of Water Resources staff continues to work with municipal officials in Middletown in consideration of possible next steps.

During this time period, Office of Water Resources staff also began meeting with and providing technical assistance to the city of Providence as it reaches out to other Upper Narragansett Bay municipalities in exploring adoption of a regional stormwater utility.

Improving Onsite Wastewater Management

Onsite wastewater treatment systems (OWTSs) are another major source of nonpoint pollution in RI. DEM estimates that there are approximately 157,000 OWTSs in the state, serving roughly 30% of the state's population. Permits for all onsite systems in the state are issued by DEM.

In FY2012 DEM staff developed an updated map of the sewer lines in the state, which is used in the OWTS Program to show where sewers are not available and homeowners are dependent on OWTSs (Figure 3). This GIS coverage was developed with electronic information and hard copy maps from the wastewater utilities. This coverage will be useful in watershed planning efforts and for state water resources program planning and implementation.

Municipal Onsite Wastewater Management Programs

DEM has long supported local actions to manage onsite wastewater treatment systems. The development of an onsite wastewater management plan is the first step recommended by DEM for local management. Figure 3 shows the status of Onsite Wastewater Management Plans in RI as of September 30, 2012.

Once a community has a DEM approved Onsite Wastewater Management Plan, the community is eligible to participate in the state's Community Septic System Loan Program (CSSLP) which is administered by the Clean Water Finance Agency. Communities participating in the CSSLP can access funds from the state's Clean Water Revolving Loan Fund, which can then be loaned to homeowners at a 2% rate for 10 years. Over the past 14 years, the CSSLP has issued 34 loans to 12 towns totaling \$7,900,000. One loan was awarded in FY 2012, issued to the Town of Warren on January 11, 2012, in the amount of \$300,000.

In addition to the CSSLP, the Clean Water Finance Agency has implemented the Sewer Tie-In Loan Fund (STILF). Modeled after the CSSLP, the STILF provides money to the local sewer system which is then loaned to homeowners at a 2% interest rate to connect their residences into the local sewer system, thus removing a source of nonpoint pollution. A loan of \$150,000 has been provided to the sewer system in Coventry for this program in FY2012.

Onsite Wastewater Management Plans

Status as of September 30, 2012

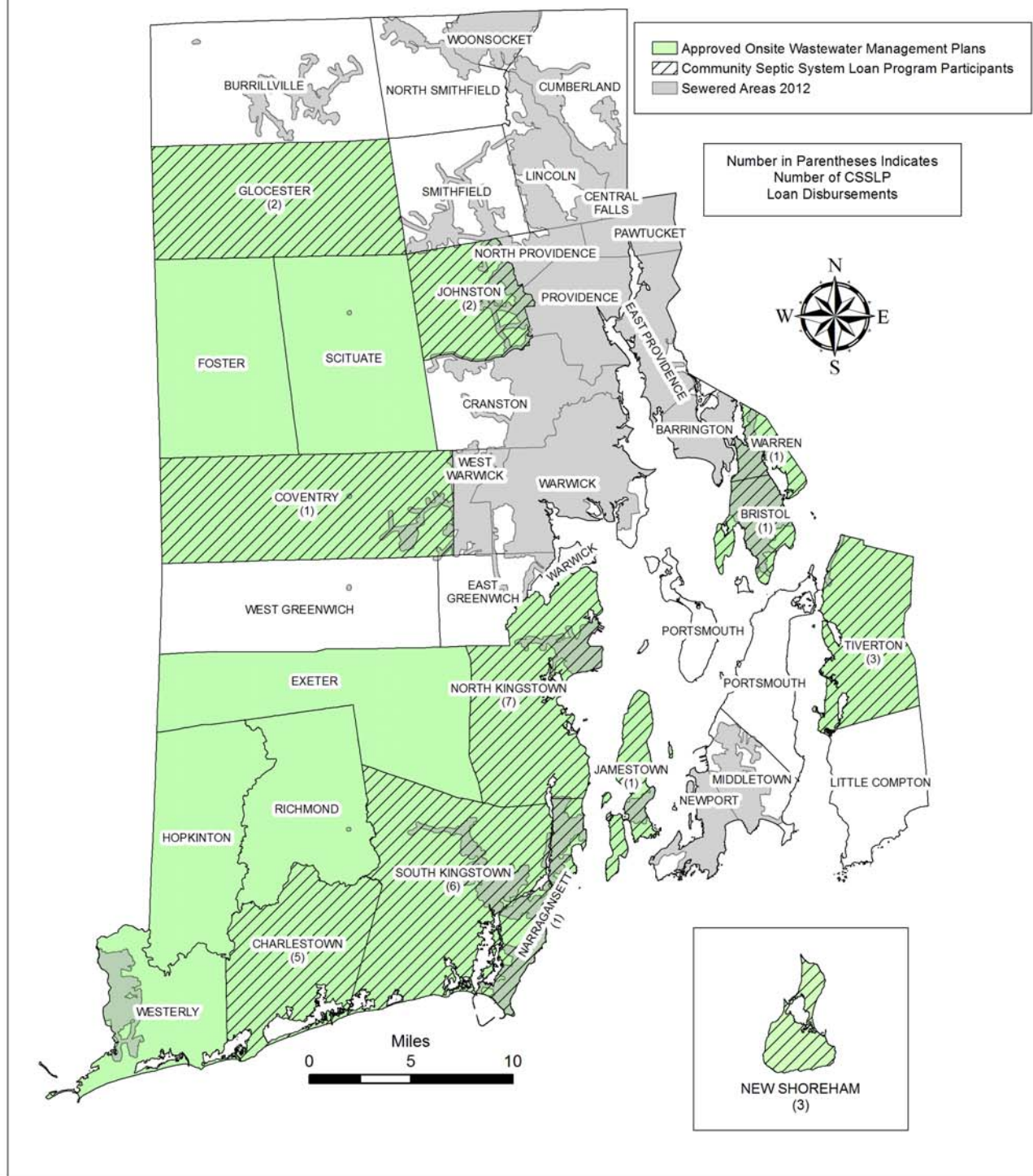
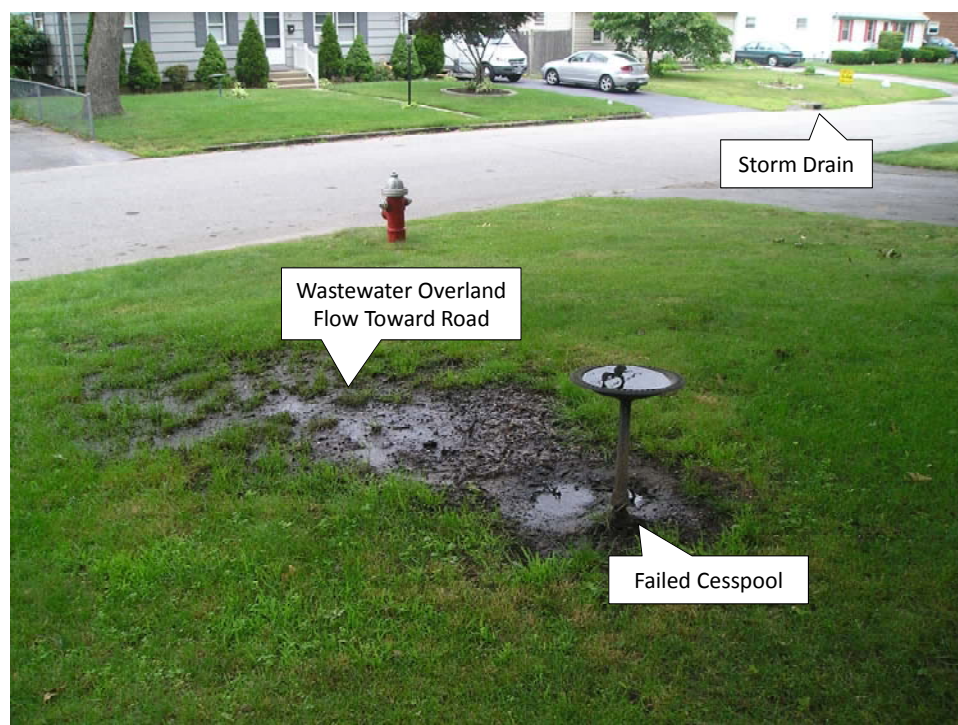


Figure 3. Status of Onsite Wastewater Management Plans in RI (September 30, 2012)

Rhode Island Cesspool Act of 2007: Implementation Phase

The RI Cesspool Act of 2007 (RIGL 23-19.15) calls for the replacement of cesspools that are within 200 feet of coastal waterbodies, within 200 feet of drinking water reservoirs, and within 200 feet of public wells by January 1, 2014. DEM has completed the notification process for property owners potentially subject to the Act. In order to keep the process manageable, ten separate mailings were done, spaced three to four weeks apart. Working from a list of properties identified through a combination of GIS analysis and permit record research, the Department issued 3,100 initial notification letters (see Table 1 for number of mailings for each community). Letters include an explanation of the Act, instructions for the steps each property owner must take to show compliance with the Act, and guidance on how to obtain more information.



Failed Cesspool

DEM's analysis to determine subject properties included several assumptions that could result in some property owners receiving a notification even though their property is not subject to the Act. For example, the actual location of each cesspool is unknown. The Department assumed that a cesspool would be located within 50 feet of the building it serves even if on some lots this 50 foot radius extended beyond the 200 foot zones specified in the Act. This assumption could result in an overestimation of subject properties and some property owners being notified even though they are not subject to the Act. A property owner in this situation can demonstrate compliance with the Act by submitting evidence to DEM showing the cesspool on their property is more than 200 feet from the feature of concern. Similarly, DEM assumed that a property is served by a cesspool if no septic system permit record or evidence of connection to a public sewer could be found. This assumption could also result in an overestimation of subject

properties. Property owners can show compliance with the Act by submitting a copy of a septic system permit, a sewer usage bill, or an inspection report showing that an onsite wastewater treatment system (not a cesspool) is in use.

For those properties correctly identified as subject to the Act, owners must submit an inspection report. Those who are eligible for a time extension due to economic hardship or because of planned sewer line extensions must also submit additional information to support an extension request. Cesspools shown to be failed must be replaced within one year of discovery and cesspools that are not failed must be removed from service by January 1, 2014.

Town	Date of Mailing	# Notices Mailed	Town	Date of Mailing	# Notices Mailed
Jamestown	2/22/2011	12	Portsmouth	12/6/2012	453
North Kingstown		582			
			Burrillville	8/23/2011	28
Narragansett	3/21/2011	352	Coventry		17
			Cumberland		5
Warren	4/4/2011	162	Exeter		20
Cranston		8	Glocester		24
EG		9	Hopkinton		29
Middletown	5/6/2011	28	N. Smithfield	9/6/2011	14
East Providence		28	Smithfield		3
Barrington		1	Johnston		2
Bristol		15	Scituate		22
			West Greenwich		3
Tiverton	5/20/2011	243	Richmond		5
Newport		21			
Little Compton		86	Warwick	9/21/2011	564
Westerly	6/9/2011	364		Total Mailed	3100

Table 1. Number of Cesspool Act Initial Notification Letters by Town

As expected, each mailing generated an increase in the number of phone inquiries. By spacing out the notifications, the Department was able to respond to each inquiry in a timely and effective manner. The staggered mailing approach also simplified data processing as each property owner is responsible for submitting a completed response form. Response rates in the individual communities approach 60% six months after the mailing. As responses are received the data are recorded on the master list to allow appropriate follow-up. All responses will receive, at minimum, a confirmation of receipt. In cases where the property owner submitted incomplete or incorrect responses the Department will solicit additional information. For those properties that are subject to the Act, owners will be given information on the next steps they need to take in upgrading their cesspool. Finally, the Department will investigate and issue second notices to those property owners who did not submit a response.

The notices issued by DEM have generated interest among some property owners in gaining access to sewer service. The Act provides a process for requesting a time extension for those properties in areas where sewer lines are either under construction or planned. The Department continues to work with those towns that have shown interest in possibly moving forward with sewer expansions so that the goals of the Cesspool Act can be met as efficiently as possible.

Groundwater Protection Program

NPS 319 funds have been used over the years for partial support of the Groundwater Protection Program in the Office of Water Resources. Protection of groundwater quality is necessary for its use as drinking water supply and its contribution to and its impact on surface water quality.

The DEM "Groundwater Quality Rules" classify all of the state's groundwater resources and establish groundwater quality standards for each class. The four classes are designated GAA, GA, GB, and GC in accordance with the RI Groundwater Protection Act of 1985 (RI General Laws 46-13.1). Groundwater classified GAA and GA is to be protected to maintain drinking water quality, whereas groundwater classified GB and GC is known or presumed to be unsuitable for drinking water use without treatment. Greater than 90% of the state's groundwater resources are classified as suitable for drinking water use (i.e., class GAA and GA). In addition, wellhead protection areas have been delineated for each of the state's 687 public wells.

In FY2012 Water Resources staff adopted new comprehensive rules to regulate discharges into the ground and onto the ground surface that will reach groundwater (groundwater discharge). The new rules, "Rules for the Discharge of Non-Sanitary Wastewater and Other Fluids To or Below the Ground Surface" (Groundwater Discharge Rules), incorporate the requirements of the federal Underground Injection Control Program for discharges below the ground surface and other state regulated discharges to the ground surface that may affect groundwater. In short, this Program addresses all discharges to groundwater that are not addressed under the OWTs Program. Program activities include the review of discharge applications and the issuance of discharge system approvals and registrations, the oversight of voluntary and involuntary closures of groundwater discharges, and review of facility operations for compliance with permit conditions (e.g., monitoring of effluent and groundwater).

The RI Stormwater Manual ("Manual") requires groundwater recharge of a portion of the site runoff from impervious surfaces. This is part of the Manual's focus on low impact development (LID) strategies. The primary goal of LID is to reduce runoff and mimic the predevelopment site hydrology by using site planning and design strategies to store, infiltrate, evaporate, and detain runoff as close as possible to the point where precipitation reaches the ground. The DEM Groundwater Discharge Rules require registration of stormwater discharges and these discharges must be in compliance with all provisions of the Stormwater Manual. Stormwater infiltration must be done by approved best management strategies in the Manual that have specific design standards in order to protect groundwater quality.

Lake Management

Rhode Island's lakes and ponds are a valuable natural resource relied on to supply drinking water to a majority of the State's population, highly valued for active and passive outdoor recreation and recognized as essential to our freshwater ecosystems. In February 2012, RI DEM submitted a report to the Governor and the Rhode Island General Assembly "Rhode Island Freshwater Lakes and Ponds: Aquatic Invasive Plants and Water Quality Concerns." This Report acknowledged the need to strengthen lake management in RI.

Lakes cover 20,749 acres of the Rhode Island landscape. RIDEM uses a data system to track 237 lakes that account for 91% of Rhode Island's total lake acreage. Data is available to assess water quality in about 75% of the statewide acreage. Much of the data is generated from the University of Rhode Island Watershed Watch program which has coordinated volunteer-based monitoring in lakes for 24 years. Since 1999, the DEM Office of Water Resources has provided funding (NPS 319 funds, in part) to the Watershed Watch Program to support and expand the program.

The 2010 statewide assessment of water quality conducted by RIDEM found that 9,861 lake acres, or 63% of the total acreage assessed, have one or more water quality impairments. The largest cause of impairment is aquatic invasive plants which adversely affect aquatic habitat in about one-third of the total lake acreage in Rhode Island. Fifty-nine lakes, covering about 24% of the total lake acreage, have water quality impairments associated with pollutants. These impairments include fish tissue contamination (primarily mercury), nutrient enrichment, metals and pathogens. Water quality restoration studies have been completed to identify the pollutant loading reductions needed to mitigate one or more impairments on 34 of the 59 lakes. Blue-green algal blooms, produced by naturally occurring cyanobacteria and often fueled by excess nutrients, are also an emerging water quality management and public health issue in Rhode Island lakes.

Aquatic invasive plants have been documented as a widespread problem in RI freshwater lakes. A review of information on the presence or absence of aquatic invasive species in 133 lakes covering 15,335 acres found that 80 lakes, or 59% of the total for which information is available, are infested with one or more aquatic invasive plants. A total of 13 different species have been detected, with variable milfoil and fanwort being the plants most commonly found. Aquatic invasive plants create dense vegetative growth in lakes that interferes with the desirable uses of lakes and has been documented by researchers in New England and elsewhere to reduce lakeside property values as the infestation progresses.

Other NPS Program Activities

Blackstone River Decentralized Wastewater Demonstration Project: DEM's Nonpoint and Onsite Programs have taken responsibility for the RI portion of this EPA-funded project for a \$621,000 grant to the Town of Glocester to address water quality concerns in the village of Chepachet. Chepachet has had chronic septic system failures for many years that are a threat to the Chepachet River and the groundwater that is the source for all of the drinking water in the village. In addition, untreated stormwater discharges to the Chepachet River occur in several locations and drainage problems have led to localized flooding. The Town has chosen to narrow its focus to give priority to the stormwater issues in the village. The project has provided opportunities to coordinate with the RI Department of Transportation (currently designing an upgraded drainage system for State Route 44), the DEM Office of Waste Management, and the Rhode Island Historical Preservation Commission. The result of this coordination will be the construction of a wet vegetated treatment system near the River for stormwater management, a newly created town park on a remediated brownfields site, and a conceptual design for a wastewater collection system which will be completed when further funding can be obtained. Construction on the wet vegetated treatment system began during the reporting period and as of September 30, 2012, most of the excavation and final grading has been completed.



Wet Vegetated Treatment System under construction in Chepachet

Turf Fertilizer Initiative: NPS staff is participating in this regional initiative generated by the New England Governor's Committee on the Environment to work with industry stakeholders on voluntary guidance on turf fertilizer to reduce the impacts of nitrogen and phosphorus on water resources. Topics to be addressed include nitrogen and phosphorus content, application rates and setbacks, outreach and marketing, and labeling requirements.

New England Interstate Water Pollution Control Commission (NEIWPCC): DEM staff participate in the NEIWPCC Workgroups described below with staff from EPA Region 1, the five other New England states and New York. Each workgroup meets or holds conference calls two to three times per year.

The Nonpoint Source Pollution Workgroup provides a forum to share ideas on NPS issues and Clean Water Act Section 319 grants. Staff attended the NEIWPCC Annual Regional NPS conference held this year in Portsmouth, NH in May.

The Pharmaceutical and Personal Care Product Workgroup addresses the concerns about this class of emerging contaminants in groundwater and surface water.

The Onsite Wastewater Workgroup is a forum for information exchange among the state regulators working with onsite wastewater issues.

Groundwater/Source Water Workgroup addresses the numerous and varied issues in the protection of groundwater and surface water used for drinking water supply from geothermal concerns to pesticides.

TMDL Workgroup addresses issues in developing and implementing water quality restoration studies.

Source Water Protection Workshop: In cooperation with several partner agencies, DEM staff participated in the development and implementation of the workshop "Communities Protecting Drinking Water Sources: Current Challenges, New Strategies for RI Municipal Officials" held December 1, 2011. The Program was offered by USEPA along with URI, RI Health Department, RI DEM, RI Statewide Planning Program, and Atlantic States Rural Water.

GRTS: DEM NPS staff attended the national training session on the EPA required Grant Reporting and Tracking System (GRTS) in Denver in October 2011.

**Attachment 1. Section 319 Nonpoint Grants Managed During FY 2012
(Status as of September 30, 2012)**

Grantee	Grant Project Title	Affected Watershed	Grant Amount or Final Payment	Status (As of 9/30/2012)
Barrington	Allin's Cove Paper Street and Bay Spring Avenue Design and Construction	Providence River	\$143,390 (\$79,928 BWRP)	Closed
Barrington	Allin's Cove – Feasibility and Design for 3 rd Street Outfall Catchment	Providence River	\$10,100	Closed
Bristol	Town Beach Stormwater Pipe Retrofit Construction	Narragansett Bay	\$158,000	Active
Coventry	Sandy Bottom Road Wetland Restoration	Pawtuxet River	\$60,000	Active
Coventry	East Shore Drive Stormwater Improvements	Tiogue Lake	\$39,000	Active
East Greenwich	Hill and Harbor Stormwater Infiltration	Greenwich Bay	\$79,000 (\$67,000 BWRP)	Closed
East Providence	Bold Point Park Buffer Restoration Project	Seekonk and Providence Rivers	\$20,000	Cancelled
Middletown	Gaudet Middle School Stormwater Retrofit	Bailey's Brook	\$41,811	Closed
Middletown	Maidford River Bank Stabilization	Maidford River	\$118,000	Active
Middletown	Newport Avenue Bioretention Stormwater Retrofit Design and Implementation	Easton's Bay	\$42,696	Closed
Middletown	Feasibility Study for the Attenuation of Phosphorus in Stormwater in North Easton Pond	North Easton Pond	\$31,086	Active
North Kingstown	Sawmill Pond Watershed Restoration Project	Hunt River	\$200,000	Active
North Smithfield	Branch Village Constructed Wetland	Branch River	\$174,810	Cancelled
Providence Water Supply Board	Rockland Pipe Stream Riparian Restoration	Scituate Reservoir	\$15,000	Active
RIDEM Office of Water Resources	RIDEM Facility UIC Closures	Statewide	\$66,000	Active
RI DOT	Construction of Stormwater BMP at Two Mile Corner, Middletown	Bailey Brook/N Easton Pond	\$265,000	Active
Smithfield	Stillwater Reservoir Pollution Abatement	Woonasquatucket River	\$30,000 (\$153,700 BWRP)	Closed
Warren	Onsite Wastewater Management Implementation	Touisset Point groundwater	\$13,200	Cancelled
Warren	Municipal Salt Storage Structure	Kickemuit River	\$100,000	Closed

Warwick	Brush Neck Cove Stormwater Infiltration	Greenwich Bay (Brush Neck Cove)	\$30,000	Active
Warwick	Tuscatucket Brook Stormwater Abatement Feasibility Study	Greenwich Bay (Tuscatucket Brook/Brush Neck Cove)	\$58,000	Closed
West Warwick	Former West Warwick Town Landfill Closure	Pawtuxet River	\$40,000	Active
Westerly	Municipal Salt Storage Structure	Pawcatuck River	\$174,000	Closed
Westerly	Bradford Streetscape Subsurface Gravel Wetland Design	Pawcatuck River	\$60,000	Active

NOTES:

-- The “grant amount” for the projects is not the total cost of the project. Grant recipients are required to provide a minimum match in funds or in-kind services. This required minimum match ranges from 10% to 40% (depending on the type of project) of the grant project budget (grant plus match). Completion of the recipient’s desired project occasionally requires more than the minimum match.

-- Some projects are funded jointly by the federal Clean Water Act and the state Bay and Watershed Restoration Bond Fund (BWRF).

-- Status:

Active: Work on grant development and/or grant implementation proceeding.

Closed: All work on grant has been completed, including final payment and reporting.

Work Complete – Grant Not Yet Closed: Work is done on primary deliverables, but payment and final reporting have not been completed. Therefore, the grant remains active.

Cancelled: Project cancelled with no payments made.

Attachment 2

Summary of Rhode Island Municipal Onsite Wastewater Programs

September 30, 2012

The RI Department of Environmental Management (DEM) has established minimum standards for onsite wastewater treatment systems throughout the state- *Rules Establishing Minimum Standards Relating to Location, Design, Construction and Maintenance of Onsite Wastewater Treatment Systems*. The rules are available online at: <http://www.dem.ri.gov/pubs/regs/regs/water/owts12.pdf>. DEM also encourages municipalities to establish local programs to meet the onsite wastewater needs of each town. Cities and towns have authority to set local standards for septic systems that are more stringent than state standards. Where established, these standards are part of municipal septic system management programs. Most of these programs have been created with the assistance of State Bond funds or Federal Nonpoint Source funds distributed through DEM grants (with the exception of New Shoreham, where an EPA grant was used). Towns use these funds to develop an onsite wastewater management plan (OWMP) designed to meet local needs. An OWMP describes the elements of the municipal management program for septic systems. Program elements may include, for example, passing an ordinance requiring system inspections, enhancing homeowner education, or specifying more stringent treatment requirements in environmentally sensitive areas. Once approved by DEM, an OWMP makes a town eligible to apply to the Community Septic System Loan Program (CSSLP). CSSLP has been the primary incentive for towns to develop an OWMP. CSSLP funds come from the State Revolving Fund and are administered by the RI Housing Agency. Money is used by participating towns to provide low interest loans to homeowners to cover the costs associated with septic system repairs and upgrades.

This document provides a brief summary of local onsite wastewater management in Rhode Island. Eighteen towns have an approved OWMP; twelve participate in the CSSLP. The following cities and towns are primarily served by sewers and have not initiated local efforts to manage septic systems: Barrington, Central Falls, East Providence, Lincoln, Newport, North Providence, Pawtucket, Providence, West Warwick, and Woonsocket.

Bristol: Much of the Town of Bristol is served by municipal sewers, but some onsite systems are in use. Bristol has an approved OWMP and is participating in the CSSLP. The plan calls for voluntary system inspections and homeowner education.

Burrillville: Burrillville does not have an active municipal onsite wastewater management program at this time.

Charlestown: Charlestown has an approved OWMP and has a robust municipal onsite wastewater management program in place. The town charter includes a dedicated staff person to run the onsite wastewater program. The town has a wastewater management ordinance requiring periodic inspection of onsite systems. The town also maintains a web-based septic system inventory and tracking program, and is in the midst of a town-wide cesspool phase-out program. Charlestown also participates in the CSSLP.

Coventry: Coventry has an approved OWMP and participates in the CSSLP. The approved OWMP proposes phased implementation of a management program based on improving homeowner awareness, creating a septic system inventory, and promoting voluntary system inspections. The management program focuses on making financial assistance available to repair or replace failed systems and cesspools. Through CSSLP, loans of up to \$10,000 are available to residents who meet the town's eligibility criteria.

Cranston: The City of Cranston is primarily served by sewers and does not have an active municipal onsite wastewater management program at this time.

Cumberland: Cumberland does not have an active municipal onsite wastewater management program at this time.

East Greenwich: East Greenwich has a municipal sewer system for the area east of Route 2, serving approximately two-thirds of the town's population. The rest of the town is served by onsite systems. The town does not have an approved OWMP.

Exeter: Exeter has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Foster: Foster has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program.

Glocester: Glocester has an approved OWMP and has implemented a limited municipal onsite wastewater management program. The town participates in the CSSLP. The management program encourages voluntary system inspections. The town also requires local review and a special-use permit for proposed onsite systems located within 150 feet of a waterbody.

Hopkinton: Hopkinton has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Jamestown: Jamestown has an approved OWMP and has a municipal onsite wastewater management program in place. The town participates in the CSSLP. Jamestown has an onsite wastewater management ordinance requiring septic system inspections at regular intervals. The town also has a High Groundwater Overlay Zone specifying additional septic system siting and treatment requirements. Jamestown uses a web-based inventory and tracking computer program to monitor septic system maintenance and track performance.

Johnston: Johnston has an approved OWMP and is participating in the CSSLP. The plan utilizes education and outreach efforts to encourage voluntary system inspections.

Little Compton: Little Compton does not have an active municipal onsite wastewater management program at this time.

Middletown: Middletown does not have an active municipal onsite wastewater management program at this time.

Narragansett: Narragansett has an approved OWMP and participates in the CSSLP. The town does not have an onsite wastewater management ordinance, but the zoning ordinance sets more stringent standards than the state regulations for septic system siting. The town utilities ordinance requires septic system pumping at least every 4 years, with records submitted to the town.

New Shoreham: The Town of New Shoreham has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring system inspections and maintenance. A town-wide cesspool phase-out program is ongoing. New Shoreham's zoning ordinance specifies treatment standards based on location and soil conditions. The town also participates in the CSSLP.

North Kingstown: The Town of North Kingstown has an approved OWMP and has a municipal onsite wastewater management program in place. The town has an onsite wastewater management ordinance requiring septic system inspection and maintenance at regular intervals. The town participates in the CSSLP with loan funds administered by the Water Department.

North Smithfield: North Smithfield currently has no formal municipal onsite wastewater management program. Basic outreach materials for septic system operations and maintenance are available on the Town's web site.

Portsmouth: Portsmouth does not currently have a DEM-approved municipal onsite wastewater management plan. The town is currently evaluating several options, including both expanded sewer service and enhanced management of onsite systems.

Richmond: Richmond has an approved OWMP. The plan calls for education and outreach efforts to encourage homeowners to properly maintain septic systems and recommends voluntary system inspections.

Scituate: Scituate has an approved OWMP. The plan utilizes education and outreach efforts to encourage voluntary system inspections. The town also utilizes a web-based inventory program. The town has been approved for participation in the CSSLP.

Smithfield: Smithfield does not have an active municipal onsite wastewater management program at this time.

South Kingstown: South Kingstown has an approved OWMP and has an onsite wastewater management program in place. The town has a wastewater management ordinance requiring inspection of onsite systems. A town-wide cesspool phase-out is nearly complete with all required deadlines having passed. Cesspools discovered via the inspection program had to be upgraded within 5 years of discovery. Cesspools were also required to be upgraded within 12 months of the sale of a property. The South Kingstown zoning ordinance contains more stringent setbacks from natural features than the state

requirements. South Kingstown uses a web-based inventory and tracking program and participates in the CSSLP.

Tiverton: Tiverton has an approved OWMP and an onsite wastewater management program, including a management ordinance. The town participates in the CSSLP. The ordinance requires septic system inspection and maintenance and mandates the installation of access risers and effluent filters when systems are repaired or upgraded. Tiverton is in the process of implementing a town-wide cesspool phase-out program. Coastal areas in Tiverton are still subject to the R.I. Cesspool Act of 2007 because the Town program specifies later deadlines than the State program. The Town has focused initially on the Stafford Pond watershed and has nearly completed upgrades in this area.

Warren: Although much of the Town of Warren is served by sewers, the Touisset Neck section of town is not. The Town has an approved OWMP for the un-sewered areas of town. The plan proposes an aggressive monitoring and oversight program with a web-based inventory and tracking system. Warren participates in the CSSLP.

Warwick: Much of Warwick is sewerred, but a significant number of onsite systems remain. The city is in the process of implementing a mandatory sewer tie-in program. Lots with access to municipal sewers will be required to abandon their onsite system and connect to the sewer line. The city is considering the development of a management program for those areas where sewer service will not be extended.

West Greenwich: The Town of West Greenwich does not have an active municipal onsite wastewater management program at this time.

Westerly: The Town of Westerly has a municipal sewer system serving the downtown area, corresponding to approximately half the town's population. The rest of the town is served by onsite systems. Westerly has an approved OWMP which calls for creation of a wastewater management district for areas not currently served by sewers and where the Wastewater Facilities Plan indicates sewer extensions are not planned. Within this district, the Town will create a homeowner education and outreach program and create a computerized inventory containing results of voluntary inspections. The town has been approved for participation in the CSSLP but has not yet drawn any loan funds.